a. m. the sun shone through this cloud, dissipating it temporarily. On December 3, a similar light was observed at about the same hour, but the cloud was denser and was not subsequently dissipated.

Mr. Brooks's photograph is the first that we have seen illustrating the delicate illumination of the under surface of a cloud at sunrise or sunset. But such phenomena are very common and always excite admiration during sunsets in the eastern portion of the United States. They are especially brilliant when the sky is clear in the distant west so that as the sun disappears below the horizon in a dry, clear air his beams, for a few minutes strike upward on the under surface of a broad layer of clouds. Under these conditions, the observer sometimes sees long streaks of gorgeous colors, at other times symmetrical arrangements of bright spots, both of which show that the under surface of the cloud is not a smooth and uniform surface, but is sometimes thrown into waves, the lowest limits of which are illumined by the sun; at other times it is thrown into irregular dimples and is full of masses of denser cloud distributed among the lighter and rarer material.

From an artistic point of view photographs of these sunset illuminations have much interest, but from a meteorological point of view still more. One of the oldest methods of determining the height of the clouds consists in measuring the angular altitude and azimuth of a cloudy point that is just on the border between the dark section of the sky and the illumined portion. By noting the time exactly, one is able to compute the apparent position of the upper limb of the sun, and by assuming that the light from the upper limb is that which, grazing past the edge of the spherical earth, last falls upon the cloud, one can easily calculate the point at which this line intersects the line of sight of the observer and, therefore, the point at which the clouds must exist. Special tables to assist in this calculation were published by Zenker in his Meteorological Calendar for 1887. The method in general was proposed by James Bernoulli in 1744, and was extensively applied by Liais in 1854, but in its application one must be very sure that the beam of light from the sun grazes the surface of the ocean or the lower level planes of the earth's surface and not the tops of clouds or mountains.

If such beautiful photographs as those of Mr. Brooks could be accompanied by two necessary items, namely, the exact second of the correct time and a scale of angular altitude and azimuth, then Bernoulli's method could be applied to a large surface of alto-stratus cloud and would give us much information with regard to its altitude and its irregularities.

DISTANT THUNDER.

The Rev. J. J. Abell, of the Bethlehem Academy, St. John, Ky., makes the following interesting observation:

On the evening of January 12, 1899, at 7:07, central time, the writer observed lightning to the northwest. He began counting seconds, but ceased counting after a minute and a half had elapsed without audible thunder. Low and heavy thunder began rolling in the northwest upward of a minute later. This was so remarkable that with watch in hand he awaited a repetition of the lightning.

At 7h. 11m. 05s. he observed a flash that illumined a band along the northwest horizon about 50° long and 10° wide. At 7h. 13m. 45s. came the heavy, low, but unmistakable roll of thunder, again from the northwest.

The air was perfectly calm, and its temperature 49° F. The geographical position of the observer was latitude, 37° 42′ north; longitude, 86° 00′ west (Greenwich).

Mr. Abell remarks that the above interval of 160 seconds, with an air temperature of 49°, corresponds to a distance of 33.6 miles. This observation is interesting in connection with the statement made in many text-books that an interval of longer than eighty seconds is rarely or never observed.

A NEW STYLE OF ANEROID.

According to a circular received from Mr. Edward Whymper, a modified form of aneroid has been invented by Col. H. Watkins, of the British Army, which has given better results in the hands of surveyors and mountaineers than any other thus far tried by Mr. Whymper. The instruments of this kind are now made by Mr. J. J. Hicks and will be known as Watkins' Mountain Aneroids.

Mr. Whymper states that all aneroids, when carried to higher points in the atmosphere, lose with respect to the mercurial barometer, that is to say, read lower than it. When tested under the receiver of an air pump, when the pressure is diminished rapidly, the aneroid will, in a short time, read lower than the mercurial even though they may agree exactly at the first minute. The greater the length of time that the aneroid is kept under low pressure so much the greater is the loss. It appears, moreover, that when returning to the normal pressure at sea level the aneroid will, in the course of time, recover all its previous loss and read correctly.

Manufacturers and inventors have endeavored to diminish these errors. The former have attempted to abolish the fundamental cause, and the latter to shorten the length of time that the corrugated disks are exposed to the influence of the low pressure.

The Watkins aneroid is so constructed that the corrugated disk is put in action when required and thrown out of action when it is not wanted for use. In order to accomplish this the lower portion of the vacuum box, instead of being a fixture, is free to rise, thus relieving it of any strain. When a reading is required, a fly-nut is screwed up as far as it will go, thus bringing the instrument into the normal condition in which it was graduated.

Actual comparison between aneroids and mercurials throughout Switzerland in 1898 seems to show that the new form of aneroids is about as good as the mercurial barometer itself. It is very unfortunate that the new instrument does not easily lend itself to continuous registration as in the case of the ordinary aneroid.

LOW PRESSURES AND TIDAL WAVES.

Mr. H. C. Russell of Sidney, New South Wales, is said to have proved that of the so-called tidal waves observed near that place only 1 per cent is produced by seismic disturbances, while 60 per cent is due to low pressures producing waves in the South Pacific.

A tidal wave, as we have said in the MONTHLY WEATHER REVIEW for 1896, must not be confounded with a wind wave or waves produced by earthquakes. The use of the term tidal is oftentimes quite improper and unwarranted. The great waves that are reported on the Australian tide gauges may be due to heavy winds, but there is no reason to think they are due to special tidal action.

FLOATING SPIDER WEBS.

A paragraph in the Advertiser of Montgomery, Ala., states that on November 21, numerous batches of a spider-web substance were seen floating in the air and falling from the trees and leaves to the ground. Some of it was in films 15 or 20 feet long, but occasionally masses a few inches in length and an inch or more broad were observed. The author of the paragraph states that it was not spider web but resembled fine fibers of asbestos, and that it was probably connected with the fall of November meteors. It is also said to have shown a phosphorescent effect.

As there are several species of spiders that float indefi-